

REMARKS

In this Amendment, Applicants have amended claims 44, 48, 60 and 62 and canceled claims 13, 38 and 64 to more appropriately define the invention. Accordingly, claims 1, 3-12, 14-37 and 38-63 are pending.

Preliminary Matter – Consideration of IDS

As a preliminary matter, upon a review of the file, it appears that the Examiner has not yet returned an initialed copy of the 1449 form provided with the Information Disclosure Statement submitted May 3, 2001. A copy of the Information Disclosure Statement is enclosed for the Examiner's convenience. Applicants respectfully request that the Examiner consider the reference cited in the Information Disclosure Statement and forward an initialed copy of the pertinent 1449 form in the next communication.

Rejection under 103

In the Office Action, the Examiner rejected claims 1 and 3-64 under 35 U.S.C. 103(a) as being unpatentable over Hilliard et al (US Patent Application Publication No. 2002/0080168) in view of Feasey (U.S. Patent No. 5,574,664). Applicants respectfully traverse the rejection. The applied references fail to disclose or suggest the inventions defined by Applicant's pending claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed inventions.

In support of the rejection, the Examiner cited Hilliard et al. as disclosing the invention substantially as claimed. With respect to claim 1, the Examiner characterized Hilliard et al. as disclosing obtaining information characterizing the color response of a display device associated with a client residing on a computer network by guiding the client through a color profiling process that includes "estimating the gray balance ["gray scale correction"] of the display device." The Examiner stated that Hilliard et al. "does not explicitly disclose that 'the color profiling process includes estimating the gray balance of the display device,'" but noted that Hilliard et al. teaches gray scale correction.

The Examiner further cited Feasey as disclosing a "gray balance module" as part of a monitor calibration device. The Examiner then asserted that it would have been obvious to one

of ordinary skill in the art to modify the Hilliard et al. system in view of Feasey. The Examiner reasoned that modification of the Hilliard et al. system would have been obvious:

in order to effectively achieve desired output characteristics/color rendition with easy manner, as such improvement is also advantageously desirable in the teaching of Hilliard et al. for producing proper calibrated images, modified color profile data and color corrected images, thereby providing completely accurate color correction to a user over a network.

The Examiner did not specify the particular modifications to Hilliard et al. thought to be necessary to arrive at the claimed invention, but apparently was referring to incorporation of a calibrator with a gray balance module as taught by Feasey.

Applicants respectfully submit that the Examiner's conclusion of obviousness is improper for at least the following reasons. First, Hilliard et al. appears to make no mention of the use of gray balance estimation in color profiling of a display device. Second, Feasey does not describe gray balance estimation for profiling of a display device, and instead is directed to monitor calibration. Hence, Feasey provides no teaching that would have suggested modification of the color profiling process of Hilliard et al. to conform to the claimed invention.

Third, incorporation of a gray balance module, as taught by Feasey, in the Hilliard et al. system would have made no sense to one of ordinary skill in the art. In particular, a calibrator with gray balance module as taught by Feasey would have been inconsistent with the remote profiling techniques described by Hilliard et al. Fourth, even if Hilliard et al. were somehow modified in view of Feasey, the resulting system would not conform to the requirements of Applicants' claims.

Fifth, as requisite motivation, the vague desire for more accurate color output identified by the Examiner bears no relationship to the particular modifications necessary to arrive at the claimed invention. Sixth, with respect to various claims, neither Hilliard et al. nor Feasey discloses or suggests additional limitations, such as estimating a coarse gamma for a display device and estimating a fine gamma based in part on the coarse gamma, as well as specific requirements for estimation of gray balance, and other limitations.

Each of these deficiencies in the rejection under section 103 is discussed in more detail below.

1. *Hilliard et al. does not suggest gray balance estimation for color profiling of a display device*

As recognized by the Examiner, Hilliard et al. does not appear to disclose or suggest a gray balance estimation.

Unlike the requirements of claims 1-43, for example, Hilliard et al. makes no mention of obtaining information characterizing the color response of a display device associated with a client residing on a computer network by guiding the client through a color profiling process that includes estimating the gray balance of the display device.

As another example, with reference to the requirements of claims 44-51 and 60-63, Hilliard et al. fails to suggest obtaining information characterizing the color response of a display device associated with a client residing on a computer network, wherein the information includes information based on gamma, gray balance and black point.

Further, Hilliard et al. does not disclose or suggest profiling the color response of a display device by estimating black point, coarse gamma, fine gamma based in part on the coarse gamma, and a gray balance, as set forth in claims 52-59.

The reference to "gray scale correction" in the Hilliard et al. reference has no relationship whatsoever to gray balance, as set forth throughout Applicants' claims. Indeed, gray balance is generally meaningless for purposes of gray scale correction. Gray balance, as described in Applicants' disclosure, refers to a balance between different color channels, such as red, green and blue, in a multi-color imaging system. For example, Applicants' disclosure states that gray balance provides an indication of the amount of color shift of a neutral gray toward one or more of the color channels used by the display device, e.g., red, green, and blue. Page 24, lines 29-31.

Gray scale correction, on the other hand, refers to correction of gray scale intensity or density levels that apply to a single color channel, such as a single color channel in a monochromatic system, e.g., for black and white imaging. The Hilliard et al. disclosure makes this point clear. At paragraph 42, for example, Hilliard et al. states that while the disclosure is directed generally to "color correction," it may be applicable to gray scale correction, i.e., non-color correction. Hence, for gray scale correction for a single color channel, it seems that the concept of gray balance would be irrelevant because there is no need to consider balance between multiple color channels.

In view of this distinction, Applicants respectfully submit that the Examiner's reliance on discussion of "gray scale correction" in Hilliard et al., relative to the gray balance limitations of Applicants' claims, is misplaced. Simply put, gray scale correction and gray balance are two entirely different concepts. Again, the concept of gray balance is generally incongruent with consideration of gray scale image data, and is nowhere considered by the Hilliard et al. reference. Gray scale implies intensity or density within only one channel, making the issue of balance with other color channels generally irrelevant. Accordingly, Hilliard et al. is completely oblivious to this requirement of Applicants' claims.

2. *Feasey is directed to monitor calibration and not profiling*

Feasey provides no suggestion of the desirability of modification of Hilliard et al. to arrive at the claimed invention. Feasey is directed to monitor calibration, and makes no mention of color profiling and correction, much less the desirability of a gray balance determination in such a process. Instead of characterizing the response of a display device and correcting color images, Feasey takes a divergent approach in altering the actual response of the display device by calibration relative to a reference.

One of ordinary skill in the art would have found no teaching in Feasey that would have suggested modification of Hilliard et al. to obtain information characterizing the color response of a display device associated with a client residing on a computer network by guiding the client through a color profiling process that includes estimating the gray balance of the display device, as defined by claims 1-43.

Similarly, with reference to the requirements of claims 44-51 and 60-63, Feasey provides no teaching that would have suggested modification of Hilliard et al. to obtain information characterizing the color response of a display device associated with a client residing on a computer network, wherein the information includes information based on gamma, gray balance and black point.

Further, Hilliard et al. does not disclose or suggest modification of Hilliard et al. to profile the color response of a display device by estimating black point, coarse gamma, fine gamma based in part on the coarse gamma, and a gray balance, as set forth in claims 52-59.

Feasey is directed to monitor calibration, and not monitor profiling or characterization, as addressed by Hilliard et al. To that end, Feasey describes a hardware device, referred to as a "calibrator," that is used to adjust a computer monitor to reproduce a color image that matches a printed image. According to Hilliard et al., the calibrator is mounted to the display surface of a computer monitor and includes optical color sensors to measure the color output of the monitor relative to a target output for a selected print medium, such as newsprint.

The calibrator described by Feasey indicates particular target values for white point, black point, and gray balance to match the selected print medium. The calibrator measures values output by the computer monitor using a white point plaque, a black point plaque and a gray balance plaque displayed by the monitor. When the measured values differ from the target values, the user applies controls in a calibration window displayed by the monitor to adjust the display characteristics of the computer monitor.

Specifically, using the calibration window, the user adjusts gamma values for placement in a calibration table to drive red, green and blue color guns within the monitor. The process can be repeated to generate calibration table entries for different types of print media. Hence, a user applies the calibrator to determine adjustments to monitor settings in order to calibrate the output of the monitor for a particular print medium, thereby change the color output of the monitor.

Hilliard et al., on the other hand, describes characterization of a computer monitor, and color correction of images provided over a network for display on a computer monitor. In particular, Hilliard et al. describes correction of color images according to characterization information for a computer monitor, and delivery of the corrected color images for display on the monitor.

As further discussed below, one of ordinary skill in the art would not have considered it obvious to modify Hilliard et al. in view of Feasey to include a calibrator with a gray balance module. Physical calibration of a monitor is fundamentally different from characterization of a display device and color correction of images sent to the display device, as described by Hilliard et al.

On the contrary, Feasey is concerned with actually altering the color output of the computer monitor, e.g., by altering gamma values used to drive the red, green and blue color guns. Consequently, Feasey represents the antithesis of the characterization- and color

correction-based approach described by Hilliard et al. One of ordinary skill in the art would have considered the calibrator taught by Feasey to be inappropriate for use in a characterization system as described by Hilliard et al.

3. *Incorporation of Feasey gray balance module in Hilliard et al. would be inconsistent with operation of Hilliard et al.*

In light of the emphasis of Hilliard et al. on characterization and color correction, and the teachings of Feasey relative to monitor calibration, Applicants respectfully submit that modification of Hilliard et al. to include a gray balance module as taught by Feasey would make no sense.

One of ordinary skill in the art would have recognized that there is no need for a gray balance module in the Hilliard et al. system because Hilliard et al. contemplates remote characterization, based on delivery of characterization images or test patterns for display on a display device, and receipt of user choice information, to generate a characterization file.¹ This is in contrast to monitor calibration.

The use of a gray balance module as taught by Feasey to adjust the calibration of a computer monitor would have been inapplicable to the characterization and color correction system described by Hilliard et al. In particular, it is unclear why a system that relies on remote characterization and color correction would make use of a device configured for monitor calibration. One of ordinary skill in the art would seemingly view such a modification as inconsistent with the operation of the Hilliard et al. system, because the Hilliard et al. system focuses on remote characterization based on user choices as contrasted by monitor calibration using a physical calibrator.

Further, if a gray balance module were incorporated in the Hilliard et al. system, it is unclear how such a feature would contribute in any way to the color characterization process of Hilliard et al., inasmuch as the Feasey is focused on calibration. Moreover, the need for a physical calibrator device that must be attached to the computer monitor of a remote user, per Feasey, would seem to undermine the effectiveness of, or at least be inconsistent with, a remote characterization process that relies on user choice, as described by Hilliard et al.

Again, Hilliard et al. provides no teaching that would have suggested estimating gray balance in a color characterization process, and Feasey is not even directed to color profiling, but rather device calibration. Accordingly, without access to Applicants' own disclosure, one of ordinary skill in the art would have had no suggestion of the desirability of a gray balance estimation in profiling the color response of a display device, as defined in Applicants' claims.

4. *Modifying Hilliard et al. in view of Feasey would not produce claimed invention*

Even if Hilliard et al. were modified in view of Feasey to include a calibrator with a gray balance module, it is unclear how the modified system would then guide the client through a color profiling process that includes estimating the gray balance of the display device. Feasey is directed not to color profiling and correction, but rather calibration of a computer monitor. Feasey describes a calibrator that measures gray balance to aid a user in altering the physical output of a computer monitor to match a print medium.

It is unclear what role the calibrator taught by Feasey would or could play in a remote characterization process as taught by Hilliard et al. Unfortunately, the Examiner did not explain what sort of modification would have been made to Hilliard et al. by one of ordinary skill in the art in view of Feasey. Applicants submit that incorporation of a calibrator with a gray balance module in the Hilliard et al. system simply would not result in the claimed invention, as the calibrator described by Feasey appears to have nothing to do with color characterization and would play no part in such a process.

In summary, even if Hilliard et al. were somehow modified in view of Feasey, the resulting system would fall far short of the requirements of Applicants' claims.

5. *The identified motivation has no nexus to the required modifications*

The motivation identified by the Examiner in support of the obviousness of modifying Hilliard et al. in view of Feasey is inadequate. Even if the vague desire to achieve more accurate color exists in the prior art, which it certainly does, such a desire is universal and provides no special insight into the particular modifications that would have been necessary to arrive at the claimed invention.

¹ To the extent Hilliard et al. also may contemplate calibration, this feature is inconsistent with the requirements of

For example, this vague notion that improved color accuracy is desirable says nothing about the desirability of a gray balance estimate in a color profiling process. Accordingly, if one of ordinary skill in the art were seeking improved color accuracy generally, how and why would that person seize upon the advantages and desirability of a gray balance estimate in a color profiling process, without access to Applicant's disclosure?

As described in Applicants' specification, a gray balance estimate may be effective in simplifying a color profiling process, such as one that relies on user input. For example, a gray balance estimate may help reduce the number of clicks required for accurate color profiling. Appreciation of such advantages are completely lacking in the prior art of record.

Feasey provides no suggestion that estimating gray balance would have been desirable in a color characterization process. Indeed, Feasey is not even directed to color characterization, but rather measurements for device calibration. Similarly, Hilliard et al. clearly lacks such a teaching with respect to gray balance. Therefore, it seems that the only sufficient motivation for such a modification would have come from Applicants' own disclosure, which, of course, cannot be relied upon in support of a prima facie case of unpatentability.

In summary, the general motivation identified by the Examiner lacks any nexus to the specific features required by the claimed invention. Therefore, Applicants respectfully submit that the Examiner has not established a prima facie case of unpatentability.

6. *Additional limitations are lacking from Hilliard et al. and Feasey*

In addition to the features plainly lacking from the Hilliard et al. and Feasey references, various additional limitations likewise are neither taught nor suggested by those references. As one conspicuous example, Applicants are unable to find any mention of the estimation of a coarse gamma for a display device, and a fine gamma for the display device based in part on the coarse gamma, in Hilliard et al. passages identified by the Examiner. This feature is required by claims 7-11, 32-36, and 52-59.

Also, claims 9, 34, and 54 recite features relative to estimation of a single coarse gamma for the red, green and blue channels. As another example, claims 10, 35, and 55 recite features relative to estimation a single fine gamma for the red, green and blue channels. In addition,

Applicants' claims, which relate to profiling.

claims 11, 36, and 56 specify features relative to estimation of gray balance and individual gammas. Aside from the lack of any teaching relative to fine gamma and gray balance estimation, the applied references clearly fail to suggest these additional features, which the Examiner did not appear to address in detail.

In this response, Applicants have focused on certain features of the claimed invention to demonstrate the clear deficiencies in the prior art of record, and the lack of support for a prima facie case of unpatentability. At the same time, however, Applicants in no way acquiesce in the propriety of the Examiner's rejections with respect to other limitations expressed in the claims, either in the Examiner's interpretation of such limitations or factual findings with respect to the scope and content of the prior art.

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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